COOPERATIVE EXTENSION SERVICE
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Tips On Weatherizing A Mobile Home In Alaska

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There are many vitally important factors to consider concerning your comfort when you plan on renting, purchasing or selecting a site on which to place a mobile home.

When planning to purchase or rent a mobile home in Alaska, you must consider several factors that determine the comfort of a mobile home.

- The insulation value of floors, walls and ceilings
- The size of the heating system
- The heat distribution system
- The quality of windows

When selecting a site on which to place a mobile home, you must consider these factors:

- Adequate waste disposal
- Adequate water supply system
- Protection of utilities, particularly plumbing, against freezing
- Installation of an electrical outlet on the exterior wall so you can plug in your vehicle's engine heater when needed unless, of course, you plan to have a heated garage
- Outdoor storage space for items that won't fit into small mobile homes
- A storm entrance, or arctic entry, which is desirable to prevent rapid air exchange when you open the outside door

Be sure that the mobile home is adequately insulated. The insulation R-value of the floor, wall, and ceiling determines the inside surface temperatures and mobile home comfort during prolonged periods of sub-zero temperatures.

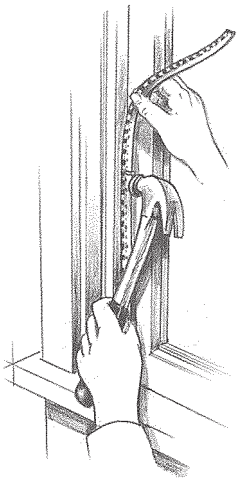
A guarantee that the heating system can maintain the indoor temperature at 70°F, even during extremely cold weather, may determine the adequacy of the heating system. However, it does not necessarily mean the home will be comfortable.

Alaska mobile home standards specify a minimum insulation R-value:

Area	R-value
• Floor	12
• Walls	10
• Ceilings	16

Studies have revealed severe temperature stratification in mobile, modular and standard frame houses that are set on open, unheated crawl spaces. A temperature difference of 10° commonly occurs between the floor and the thermostat of a mobile home. Another 10° difference occurs between the thermostat and the ceiling.

In these studies, the air temperature near the floor was raised to 65° by setting the thermostat at 75°. This resulted in a temperature of 85° near the ceiling. Although placing the equivalent of 9½ inches of fiberglass in the floor reduced heat loss, there was no significant reduction in temperature stratification.



Cold floors may be warmed by placing insulated skirting around open crawl spaces and banking the skirting with snow or bales of straw. A polyethylene vapor retarder should be laid on the ground to reduce condensation in the crawl space. Installing polystyrene foam on the ground of the skirted crawl space will result in warmer floors and lower energy requirements.

Ventilation is essential in a mobile home to reduce the moisture level in interior air. Exhaust fans should be installed in the kitchen, laundry and bathroom to remove excess water vapor produced within a home. The clothes dryer should be vented to the outside through a suitable vent opening. A humidifier should **not** be used in the winter.

Exercise caution in skirting the mobile home, especially if the unit is set on permafrost soils, particularly on newly cleared land. Melting permafrost can cause uneven settlement of the foundation cribbing or supports, resulting in serious damage to the mobile home. An alternative is to build an insulated (floor) panel that could be slipped under the mobile home. The panels could then be attached to the metal frame in some manner. The space between the mobile home floor and panels could be enclosed with an insulated stud wall. Sufficient space should be left under the mobile home for natural ventilation to minimize thawing of permafrost. Damage to the mobile home can occur when the piers under the frame settle, allowing the wood floor framing to rest on the skirting.

Aluminum window frames are inadequate for Alaska. Storm windows that are fastened on the interior walls of the mobile home reduce heat loss, but moisture will condense on the outside pane of glass and the ice will obscure vision to the outdoors. Windows that are frozen shut in the winter can be a fire hazard because they block escape from the mobile home.

In the spring, melting ice often stains interior wall panels. It is better to place storm windows on mobile home exteriors. The best types of windows for mobile homes are wood framed and double-glazed (minimum); triple glazed is preferable. To further control humidity, operate fans during bathing and showering. Install a 15-minute timer on your fan to control energy consumption.

To assure proper fuel combustion within the heating system, make certain that the vent in the floor of the furnace room is functioning. The vent is often closed during transport to prevent road dust from being sucked into the mobile home while it is being moved to a site. If the vent is not open, the furnace will not have an adequate supply of fresh air and can result in carbon monoxide poisoning of the occupants. In addition, incomplete combustion can result in excess accumulation of soot (carbon) in the chimney, resulting in a chimney fire.

Most Effective Conservation Measures For Mobile Homes

In the late 1980s, the U.S. Department of Energy sponsored a two-year study to determine the most cost-effective energy conservation measures for mobile homes in cold climates. The study identified the following "top five" measures:

1. Sealing air leaks and furnace ducts
2. Tuning up the furnace
3. Blowing insulation into the home's underside (called the belly)
4. Installing storm windows
5. Blowing insulation into the roof

Because of the wide construction variations of mobile homes, with the exception of installing plastic storm window kits that you can purchase at a hardware store, these measures will likely require the skills of trained weatherization professionals. Though you can also easily seal noticeable leaks around your home's windows and doors, these efforts will have little effect on your energy consumption if the big hidden leaks go untouched — leaks which are most easily found using a blower door, equipment commonly used by professional weatherization crews. If you are on a limited income, you may qualify for free weatherization assistance. Contact your local weatherization nonprofit or call Alaska Housing Finance Corp. at 1-800-478-4636.

Do–It–Yourself Tips

If you cannot enlist professional help, you can still go after some big leaks. Plug all holes around chimneys, vents, water pipes and heating system ductwork. Seek out hidden air passageways in closets and cabinets. Once you've stopped all the big leaks you can find, then turn your attention to the little ones — around windows, doors, electrical outlets and light switches.

Air Quality Cautions

Weatherization makes good sense but before tightening your home, it is imperative to make sure all combustion appliances such as furnaces, stoves and water heaters are in good working order and are properly vented. Failure to do so could lead to the accumulation of dangerous amounts of carbon monoxide in your home. This is another good reason to consult with a weatherization professional before taking on a major weatherization job yourself. It's also important to regularly use exhaust fans in the kitchen and bathroom to maintain good indoor air quality and minimize moisture problems. Remember to ventilate constantly when using paints and other chemical compounds in the house.

Here Are Some Low-Cost But Effective Steps You Can Take To Save Energy!

1. Install a water-heater insulation blanket and a low-flow showerhead. Also keep your hot water temperature at 120 degrees.
2. Keep your thermostat at a comfortable temperature (68 degrees is usually adequate) but reduce it at night and when you're away during the day.
3. If you have a forced air furnace, clean or replace the filter monthly. For electric baseboard heaters, clean the registers weekly and keep furniture from obstructing the flow of heat to the room.
4. Periodically have your furnace checked and serviced.
5. Try cold water clothes detergent and only wash full loads of laundry.

For More Information

Properly weatherizing your mobile home is an involved undertaking, and it's okay if you have more questions than answers after reading this publication. The publication did its job if it convinced you that weatherization measures can help save you money and make your mobile home more comfortable. The rest is easy. For help, just call your local utility or your local Cooperative Extension office, or Alaska Housing Finance Corporation.

See also the following websites:

- www.akenergy.net
- www.ahfc.us
- www.uaf.edu/ces/faculty/seifert

Reference: Montana State University Extension publication: *Mobile Homes*.

For more information, contact your local Cooperative Extension Service office or Richard Seifert, Extension Energy and Housing Specialist, at 907-474-7201 or ffrds@uaf.edu. Reviewed by Seifert in August 2009.

Visit the Cooperative Extension Service website at: www.uaf.edu/ces and Rich Seifert's home page at www.uaf.edu/ces/faculty/seifert 1-877-520-5211

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